

Petrochemical capacity has outrun demand, prolonging the industry's downturn

OVERVIEW

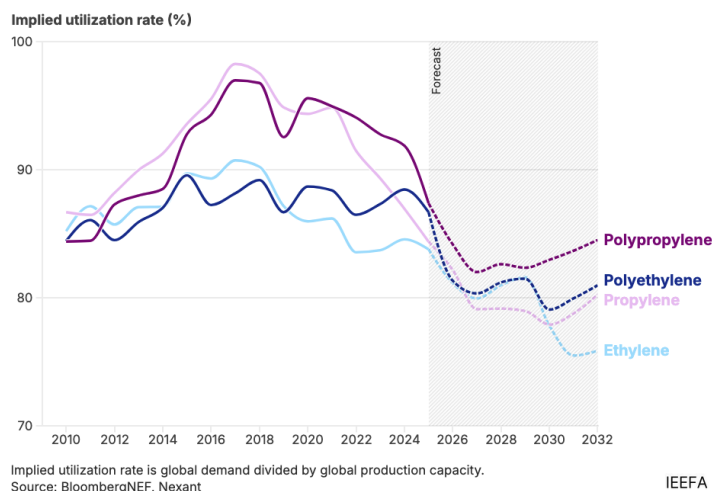
The chemicals sector is cyclical, with long periods of low prices and compressed margins punctuated by price spikes and outsize returns. Normally, demand catches up to supply, prices rise, and new investment follows. But overbuilding and new low-cost feedstocks are disrupting that cycle and prolonging the industry's downturn. Both have challenged the industry over the past decade and raise significant questions about its future.

THE UPTURN

After an extended trough in the early 2000s, demand began to rise. Global ethylene production grew more than 10% from 2000 to 2004, to 105 million metric tons. Ethylene and propylene prices in Korea and Japan peaked in the early 2010s at roughly three times their 2000s levels, and plant utilization climbed from about 85% to 90% or more.

China drove the boom. Export-led growth and post-2008 credit easing fueled construction and manufacturing, and Chinese per capita consumption of base chemicals soared five times faster than the rest of the developing world.

Utilization rates for basic chemical plants rose, then fell, as global capacity was added



THE BUILD-OUT

The industry answered with a wave of new capacity. In the U.S., the shale boom created a glut of cheap ethane that fed new crackers in the Ohio River Valley and along the Gulf Coast. But producers elsewhere were building too.

With feedstock costs comprising up to three-quarters of the production cost of various petrochemicals, much of this new capacity was located near sources of cheap and reliable feedstocks. One option was to integrate with oil refineries that naturally produce quantities of ethylene and propylene during the refining process. Another was to locate near low-cost sources of hydrocarbon gas liquids. Countries in the Middle East, for example, commissioned large new facilities to produce ethylene, propylene, and their polymers in 2009 and 2010.

The addition of capacity in the U.S., China, and the greater Asia-Pacific region had a particularly profound impact.

China, long a major importer, became a net exporter of petrochemicals in 2022, shrinking a key target market for U.S. producers.

THE TROUGH

- **Prices:** Ethylene and propylene are down one-quarter to one-half from their 2010s highs.
- **Margins:** Ethylene-naphtha spreads have fallen two-thirds in Europe and three-quarters in Japan from last decade's highs.
- **Utilization:** Rates have dropped from the low-mid 90s to the mid-high 80s, with forecasts in the mid-70s to low 80s.
- **More to come:** BloombergNEF expects capacity additions to peak in 2026 for polyethylene, 2027 for propylene, and 2030 for ethylene.

Supply additions have swamped demand. A poor demand outlook combined with significant overcapacity will continue to create headwinds for the industry and its investors.

